

4 a second dielectric material having a second dielectric constant different from the first  
5 dielectric constant,  
6 the first and second dielectric materials being scalable for a set of feature size technologies,  
7 the set of feature size technologies defined by a gate length in the range of 25-150nm, and  
8 wherein the first material thickness and the second material thickness are determined by the  
9 relationship

$$t_1/k_1 + t_2/k_2 = t_{ox}/k_{ox}$$

11 wherein  $t_1$  is the first material thickness,  
12  $t_2$  is the second material thickness,  
13  $t_{ox}$  is the minimum thickness for a gate dielectric of silicon dioxide for a  
14 chosen gate length,  
15  $k_1$  is the dielectric constant for the first dielectric material,  
16  $k_2$  is the dielectric constant for the second dielectric material, and  
17  $k_{ox}$  is the dielectric constant of silicon dioxide.

15. (Four Times Amended) An apparatus comprising:  
1 a semiconductor substrate having a transistor device formed thereon, the transistor device  
2 having a gate dielectric disposed directly between a surface of the substrate and a gate electrode  
3 comprising:  
4 a first dielectric material having a first dielectric constant; and  
5 a second dielectric material having a second dielectric constant different from the first  
6 dielectric constant,  
7 the first and second dielectric materials being scalable for each of a plurality of feature size  
8 technologies, having a gate length in the range of 25-150nm, and  
9 wherein the first material thickness and the second material thickness are determined by the  
10 relationship  
11

$$t_1/k_1 + t_2/k_2 = t_{ox}/k_{ox}$$

wherein  $t_1$  is the first material thickness,

$t_2$  is the second material thickness,

$t_{ox}$  is the minimum thickness for a gate dielectric of silicon dioxide for a

chosen gate length,

$k_1$  is the dielectric constant for the first dielectric material,

$k_2$  is the dielectric constant for the second dielectric material, and

$k_{ox}$  is the dielectric constant of silicon dioxide.